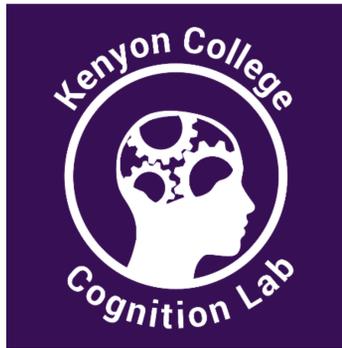


Effectiveness of Teaching a Novel Language in the Context of a Children's Summer Day Camp



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Objective

The goal of this project was to expose elementary-aged children to a new spoken and written language in the context of a summer camp in order to determine the possibility of retention. Previous research indicates that children are ready to formally learn a novel language at the age of 8 years old. Yet, in the U.S. most native English speaking children are not exposed to novel languages until middle or high school. An alternative idea was to design a program in the setting of a summer day camp which conforms with existing community camps run through SPI Spot (Science-Play Interactive spot) in Mt. Vernon. Mandarin Chinese (both spoken and written) was taught in the context of learning the science of psycholinguistics and Chinese culture. The five day summer camp was designed to expose the children to different categories of Chinese words each day, such as animals, music, and food. The participants were made up of local Knox Country children between the ages of 8 and 11. Interested children signed up and paid for the camp. On the final day of camp children were given a multiple choice learning assessment. The assessment was made up of four sections; each section was comprised of combinations of inputs and outputs, such as spoken Chinese as the prompt and English words for answers.

Method

Participants:

9 Central Ohio children paid \$15 to SPISpot
Children 8 - 11; 6 males and 3 females.

Design:

The each day of the workshop is broken up into different topics teaching scientific knowledge as well as spoken and written Chinese vocab pertaining to the topic that day. The children/participants were tested at the end using an assessment that utilizes a combination of translation questions.

Monday:

Psychology of Language - speech sounds and writing around the world
Introductory Chinese Vocabulary and Calligraphy on Rice Paper

Tuesday:

Animal Communication Science - Ape Language Projects
Animals of China - animal vocabulary
Paper Folding Cranes

Wednesday:

Music as Language
Chinese String Instrument Presented by Instructor
Traditional and Modern Music of China
Music Vocabulary

Thursday:

Regional Dialects
Food from China - Actual noodle stir fry in wok - make your own!
Food Vocabulary

Friday:

Vocabulary Review and Assessment
Make your own stir fry
Final Calligraphy - frame your favorite Chinese word

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Table 1. Percentage Correct on Second Language Chinese Assessment as a Function of Cue Type and Test Choice.

L2 Assessment	Mean	SD	Range
Cue: Spoken Chinese Test Choice: written English	71.43%	.36	0-3
Cue: Spoken Chinese Test Choice: written Pinyin	47.63%	.18	1-2
Cue: Spoken English Test Choice: Chinese Script	57.14%	.25	1-3
Cue: Spoken Chinese Test Choice: Chinese Script	57.14%	.25	1-3
Total Score Percent	58.33%	0.26	0-3

There was no significant difference in learning outcomes for the different types of test cues and choices ($p > .05$), as tested with a General Linear Model Repeated Measures ANOVA in SPSS. Additionally, there was no difference between performance when Chinese script was required for the test response and other items on the assessment ($p > .05$), indicating that the Chinese script was not more difficult to remember than other test formats, such as written English and Pinyin.

Table 2. Percentage Accuracy on Chinese Vocabulary Assessment as a Function of Semantic Category

Vocabulary Semantic Category	Mean	SD	Range
Introductory	.64	.38	.00-1.00
Animals	.57	.19	.25-.75
Music	.53	.3	.25-1.00

Table 3. Percent Accuracy of Student Assessment by Question

Item #	Item Type	Topic	Vocabulary	Mean	SD
1	Cue: Spoken Chinese	Introductory	Person/rén/人	.86	.38
2	Test Choice: Written English	Animals	Crane/hè/鹤	.43	.54
3	Cue: Spoken English	Music	Loud/xiǎngliàng/响亮	.86	.38
4	Test Choice: Written Pinyin	Introductory	What/shénme/什么	.57	.54
5	Cue: Spoken Chinese	Animals	Land/lùdì/陆地	.57	.54
6	Test Choice: Chinese Script	Music	Quiet/ānjìng/安静	.29	.49
7	Cue: Spoken English	Introductory	Big/dà/大	.71	.49
8	Test Choice: Chinese Script	Animals	Panda/xióngmāo/熊猫	.29	.49
9	Cue: Spoken Chinese	Music	Fast/kuài/快	.71	.49
10	Test Choice: Chinese Script	Introductory	Me, I/wǒ/我	.43	.54
11	Cue: Spoken English	Animals	Fly/fēi/飞	1.00	.00
12	Test Choice: Chinese Script	Music	Slow/mǎn/慢	.29	.49

Numbers in bold represent the questions the children found the hardest.

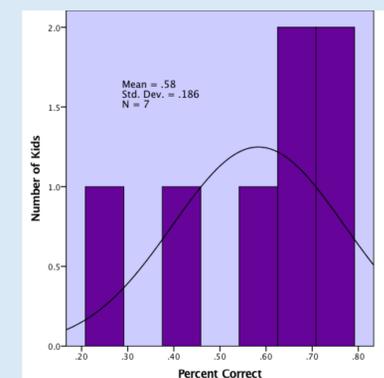
Results

Some questions were easier for the children. This was evident though the use of a General Model Repeated Measures ANOVA in SPSS, as described below Figure 1. There was no significant main effect of test type, no category is better than another $f=1.38$, degrees of freedom = 3 $p=.28$. Spoken Chinese to English words compared to Spoken Chinese to Chinese Characters, had the biggest difference in mean and a large standard deviation, however it was not significant.

We used a measure of internal consistency as a way of seeing the reliability of the assessment using Cronbach alpha = .519.

Using the Spearman Brown coefficient, we examined the correlation between the first and second half of the test and the result was .84. How people did on first and second half was correlated, which is notable considering the alternate forms of questions, as seen in Figure 3. The Guttman was used to compare odd and even questions which came out to .838; this suggests the consistency across the assessment is not based on the kinds of questions but is evident throughout.

Figure 1. Total Percentage of Correct Answers



Discussion

The format of the learning environment was designed to foster interaction with new vocabulary and to provide a novel means of writing Mandarin Chinese using brush and ink. Children appeared very responsive to the activities in the workshop and most engaged in spontaneous sentence formation with the vocabulary from the first day of camp.

Results of a one sample t-test indicate that children retained vocabulary above chance levels for all categories of information. Results of a repeated measures ANOVA indicate that children did not retain significantly more in a given category over the rest. Additionally, no testing format was better or worse, with memory for spoken and written Chinese being similar.

In conclusion, informal observations indicate that the workshop was fun and educational and the children seemed to enjoy the experience and were thankful for their time in the day camp. Based on the formal multiple choice vocabulary assessment on the final day of camp, we conclude that children did learn and retain information presented. Thus, using the format of a science-language day camp, children successfully learned a novel language in both spoken and written forms. With few children in the U.S. being exposed to a new language prior to middle school, the alternative of offering community based day camps can provide that opportunity to children age 8 and over.

